



GENERAL MOTORS NORTH AMERICA
Structure & Safety Integration

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NVS-213

12/5/06

November 27, 2006

2006 NOV 30 P 4:43

Kathleen C. DeMeter, Director
Office of Defects Investigation
NHTSA Enforcement
Room #5326
400 Seventh Street, S.W.
Washington, D.C. 20590

OFFICE OF DEFECTS
INVESTIGATION

RECEIVED
NVS-213
EA06-012
N060185
2006 NOV 30
P 4:43

Dear Ms. DeMeter:

This letter is General Motors (GM) response to your information request (IR), dated October 30, 2006, requesting peer vehicle information regarding engine stalling due to a failed crank position sensor in all 2001 model year (MY) pick-ups manufactured by GM equipped with 6.6L Duramax diesel engines.

NHTSA has requested this peer vehicle information from GM to support its investigation into allegations of engine stalling due to a failed engine sensor in certain model year 1999 – 2001 Ford pick-up trucks and sport utility vehicles equipped with diesel engines manufactured by Ford Motor Company.

Your questions and our corresponding replies are as follows:

1. State, by model and model year, the number of subject peer vehicles GM has manufactured for sale or lease in the United States. Separately, for each subject peer vehicle manufactured to date by GM, state the following:
 - a. Vehicle identification number (VIN);
 - b. Manual or automatic transmission;
 - c. Date of manufacture;
 - d. Date warranty coverage commenced; and
 - e. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2000, or a compatible format, entitled "PRODUCTION DATA." See Enclosure 1, EA06-012 Peer IR Response, for a pre-formatted table which provides further details regarding this submission.

General Motors is providing the number of subject peer vehicles produced for sale or lease in the United States by model and model year in Table 1 below:

MODEL	2001 MY
Chevrolet Silverado	37,056
GMC Sierra	11,855
TOTAL	48,911

TABLE 1 VEHICLE PRODUCTION
VEHICLE PRODUCTION DATED NOVEMBER 14, 2006

Product Investigations

Mail Code: 480-210-G11 • 30001 Van Dyke • Warren, MI 48090
N060185 Response



The production information requested in 1a-1e is provided on the Att_1_GM disk, in the folder labeled: Q_01; refer to the Microsoft Access 2000 file labeled Q_01_PRODUCTION DATA. GM is providing the state where the vehicle was shipped in response to request 1e. For some of the subject vehicles, which have incomplete warranty files, the GM warranty system does not contain a warranty start date or state where the vehicle was shipped and therefore these fields are blank in the Microsoft Access 2000 file.

2. **State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by GM to date that included a replacement of the subject component in the subject peer vehicles, regardless of the reason for the replacement: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.**

Separately, for each such claim, state the following information:

- a. **GM's claim number;**
- b. **Vehicle owner or fleet name (and fleet contact person) and telephone number;**
- c. **VIN;**
- d. **Repair date;**
- e. **Vehicle mileage at time of repair;**
- f. **Repairing dealer's or facility's name, telephone number, city and state or ZIP code;**
- g. **Labor operation number;**
- h. **Problem code;**
- i. **Replacement part number(s) and description(s);**
- j. **Concern stated by customer; and**
- k. **Comment, if any, by dealer/technician relating to claim and/or repair.**

Provide this information in Microsoft Access 2000, or a compatible format, entitled "WARRANTY DATA." See Enclosure 1, EA06-012 Peer IR Response, for a pre-formatted table which provides further details regarding this submission.

Table 2-1 summarizes by model year the regular, goodwill and extended warranty claims for the subject vehicles that were collected by searching the labor codes that may be related to replacement of the subject component regardless of the reason for the replacement. A list of the labor codes is provided in response to item No. 3. A summary of these warranty claims, including the information requested in 2(a-k), is provided on the Att_1_GM disk in the folder labeled Q_02 refer to the Microsoft Access 2000 file labeled Q_02_Warranty Data.

The warranty numbers included in Table 2-1 represent claims by our dealers for reimbursement for parts and labor costs incurred in replacing the crank position sensor regardless of the reason for the replacement. Consequently, many of these warranty claims are not related to engine stalling due to a failed crank shaft position sensor.

MAKE/MODEL	2001 MY REGULAR WARRANTY	2001 MY EXTENDED WARRANTY	TOTAL
Chevrolet Silverado	204	0	204
GMC Sierra	68	0	68
Total	272	0	272

TABLE 2-1 WARRANTY CLAIMS

GM included the customer complaint codes listed in Table 3-1 in the search criteria in order to identify the warranty claims that represent claims for replacing a failed crank position sensor related to engine stalling. Table 2-2 summarizes by model year the regular, goodwill and extended warranty claims for the subject vehicles that were collected by searching the labor codes and customer complaint codes that may be related to replacement of the crank shaft position sensor due to engine stalling.

MAKE/MODEL	2001 MY REGULAR WARRANTY	2001 MY EXTENDED WARRANTY	TOTAL
Chevrolet Silverado	29	0	29
GMC Sierra	13	0	13
Total	42	0	42

TABLE 2-2 WARRANTY CLAIMS RELATED TO STALLING

The sources of the requested information and the last date the searches were conducted are tabulated in Table 2-3 below.

SOURCE SYSTEM	LAST DATE GATHERED
GM CARD --regular warranty	11/10/2006
Motors Insurance Corporation (MIC) – extended warranty	11/09/2006
Universal Warranty Corporation (UWC) – extended warranty	11/15/2006

TABLE 2-3: DATA SOURCES

GM's warranty database does not contain the following information: vehicle owner's name or telephone number, replacement part number description, or customer concern statement. GM is providing a field labeled "Verbatim Text" in response to request 2K (dealer/technician comment). The verbatim text is an optional field in the GM warranty system for the dealer to enter any additional comments that may be applicable to the warranty claim. The verbatim text field is not required to be completed for every warranty claim.

The warranty data provided has limited analytical value in analyzing the field performance of a motor vehicle component. The warranty records do not contain sufficient information to establish the condition of the part at the time of the warranty correction; and service personnel may not consistently use the appropriate labor and trouble codes. Warranty numbers represent claims by our dealers for reimbursement for parts and labor costs incurred in performing warranty service for our customers. Consequently, some of these warranty claims are not related to the subject condition.

- 3. Describe in detail the search criteria used by GM to identify the claims identified in response to Request No. 2, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the subject condition in the subject peer vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by GM on the subject peer vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) that GM offered for the subject peer vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.**

To collect the warranty data for this response the GM Claim Adjustment Retrieval Database (CARD) regular warranty database and the Motors Insurance Corp (MIC) extended warranty database were searched using the following labor codes;

J4355 Crank Position Sensor Replacement
Z1241 Product Liability/Investigation REP PR (Goodwill)
Z1242 PAR-Repairs/Reimbursement (Goodwill)

Universal Warranty Corporation (UWC) does not use labor codes or trouble codes.

The labor codes Z1241 and Z1242 can be used by dealers for reimbursement for goodwill warranty repairs. They are not specific to replacement of the crank position sensor. GM reviewed the goodwill claims collected using these labor codes and concludes they clearly do not relate to replacement of the crank shaft position sensor based on a review of the dealer verbatim, customer code, trouble code, repair cost and vehicle VIN are not being provided.

In Table 3-1, GM lists five customer codes within the J4355 labor code that may relate to engine stalling.

Customer Code	Description
PU	PERFORMANCE: STALLS-HOT ENG
PB	PERFORMANCE: CUTS OUT
PT	PERFORMANCE: STALLCOLD(FAILED EMISSION)
PR	PERFORMANCE: SLUGGISH(STALLS-HOT ENGINE)
PQ	PERFORMANCE: ROUGHIDLE-HOT(STALLCOLD)

TABLE 3-1 WARRANTY CUSTOMER CODES

The subject vehicles are covered by a bumper-to-bumper new vehicle warranty for three years or 36,000 miles whichever occurs first. Many different extended warranty options are available through GM dealerships. They are offered at different prices and for varying lengths of time, based on customer's preference, up to 7 years from the date of purchase or up to a total of 100,000 vehicle miles. The number of extended warranty coverage contracts on the subject vehicles that have been sold by MIC regardless of status (in-force, expired, cancelled) as of November 15, 2006 is contained in Table 3-2.

MODEL	2001 MY
Chevrolet Silverado	8,012
GMC Sierra	2,536

TABLE 3-2: MIC EXTENDED WARRANTY COVERAGE CONTRACTS SOLD

4. State the number of subject components that GM has sold that may be used in the subject peer vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of sale (including the cut-off date for sales, if applicable). For each component part number, provide the supplier's name, address, and appropriate point of contact (name, title, and telephone number). Also identify by make, model and model year, any other vehicles of which GM is aware that contain the identical component,

whether installed in production or in service, and state the applicable dates of production or service usage.

An electronic summary table of the requested service part information for the subject components is provided on the in the Att_1_GM disk, in the folder labeled: Q_04, refer to the file labeled Q_04_Part Sales.

- 5. Describe in general terms the function of the subject component and how its output signal is utilized by the engine management system. Describe in detail what happens to engine performance and power output when the subject component fails to produce an output signal. Specifically state whether the engine will stall and subsequently restart when the output signal is lost.**

The crankshaft position sensor sends a signal directly to the engine control module (ECM). The ECM uses the signal to distribute fuel to the fuel injectors. The signals from the crankshaft position sensor indicate the crankshaft speed and crankshaft position. There are 57 teeth and a sync gap between each tooth on the front of the crankshaft sprocket. As each leading edge and then trailing edge of a tooth (window) passes the crank position sensor it will output an ON-OFF pulse (signal). The crank position sensor communicates this signal directly to the ECM as each window passes the sensing element.

The ECM uses the information sent by the crank position sensor to stage fuel injection by the individual fuel injectors at the correct timing indicated by the engine calibration. The specific consequences of a loss of the crankshaft position sensor output signal depends on the degree of signal loss.

- In the case where the loss of crankshaft position signal is intermittent, the engine may miss or run poorly as the ECM withholds fuel from cylinders when not receiving a signal, but then reacting to the signals it does receive. The engine will run roughly and will lose power.
- If the ECM is not receiving an output signal from the crankshaft position sensor, the ECM cannot synchronize the relative positioning of the crankshaft in relation to the camshaft. Consequently, with loss of crankshaft position signal, the fuel injectors will not deliver fuel to the cylinders and the engine will stall. If the crankshaft position signal is not present at subsequent engine start-up, then the engine will not restart.
- If the output signal from the crankshaft position sensor is below 1.35 volts (weak), the engine may stall. At subsequent engine start-up if the crankshaft position signal is not above 1.35 volts, then the engine will not restart.

* * *

This response is based on searches of General Motors Corporation (GM) locations where documents determined to be responsive to your request would ordinarily be found. As a result, the scope of this search did not include, nor could it reasonably include, "all of its divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of their headquarters, regional, zone and other offices and their employees, and all agents, contractors, consultants, attorneys and law firms and other persons engaged directly or indirectly (e.g., employee of a consultant) by or under the control of GM (including all business units and persons previously referred to), who are or, in or after 2000, were involved in any way with any of the following related to the subject condition in the subject peer vehicles:

- a. Design, engineering, analysis, modification or production (e.g. quality control);
- b. Testing, assessment or evaluation;
- c. Consideration, or recognition of potential or actual defects, reporting, record-keeping and information management, (e.g., complaints, field reports, warranty information, part sales), analysis, claims, or lawsuits; or
- d. Communication to, from or intended for zone representatives, fleets, dealers, or other field locations, including but not limited to people who have the capacity to obtain information from dealers. "

This response was compiled and prepared by this office upon review of the documents produced by various GM locations, and does not include documents generated or received at those GM locations subsequent to their searches.

Please contact me if you require further information about this response or the nature or scope of our searches.

Sincerely,



Gay P. Kent
Director

Product Investigations

Attachments

N 060185
EA06-012

ATTACHMENT "1"

GM NON-CONFIDENTIAL MATERIAL